

- ① Comments on DOE/EIS-0283-D Volume 1 Part A  
[Melvin S. Coops]  
8/20/93
- 1) Document states "Heavy Box Facilities (2-27); therefore I assume the processes will be largely manual operations.
- 2)  $^{240}\text{Pu}$  has a SFT $_{1/2}$  of  $1.32 \times 10^4$  years ( $t_{1/2} = 4540$  years)  
therefore emits 2,503 fissions/min/gram  
6% WGR  $\text{Pu} = 60 \text{ g/Kg} = 150 \times 2.5 \text{ n/f} = 375 \text{ f/n/Kg}$  ( $60 \text{ g/Kg}$ ) fast neutrons.  
(24,000 fissions total)
- 3) Additionally,  $^{239}\text{Pu}$  emits  $1.38 \times 10^4 \text{ f/n/Kg}$  ( $2.3 \times 10^{12} \text{ f/Kg}$ )  
Oxygen emits  $\sim 1/2 \text{ n/100x}$  so about  $1.5 \times 10^6 \text{ n/s/Kg}$  emitted  
 $\therefore$  approx neutron emission per Kg of  $\text{PuO}_2 = 10^6 \text{ n/s/Kg}$   
these neutrons are fast, about 2.5 MeV-energy.
- 4) All elements except Li emit a capture gamma ray ranging from 2.2 MeV (H) to 5.5 MeV (Fe), when absorbing a neutron (capture usually from thermal neutrons).  $\text{Li}^6$  generates a tritium and helium atom from capture (large resonance at 200 keV)  $\text{Li}^6 + \text{n} \rightarrow \text{Li}^7 + \text{He}^4 + \text{He}^4$  and does not emit a capture gamma ray.
- 5) Heavy concrete walls act as neutron scatterers, and when close to the neutron source, increase the local neutron flux (operating area) by a large value, i.e. experience at RFT showed that operating manual glove boxes with 22 Kg metal WGR parts, caused workers to receive greater than allowable DOE exposure in 4-5 hours. This situation will be much worse for personnel handling Pu oxide in kilogram quantities.

IDD01

## IDD01-1

## MOX Approach

DOE acknowledges the commentors concerns about neutron flux to the radiation worker. Dose to the worker will be a primary influence in design of facilities for the surplus plutonium disposition mission. This includes considering the neutron flux that could occur in the material processing and storage areas. DOE will consider the location and spacing of work stations and room walls (including the ceiling and floor), and the use of building and shielding materials that are appropriate to the types and amounts of radiation expected, in order to minimize dose to the worker. Construction and operation of facilities would be in accordance with all applicable regulations and ALARA principles.

The MOX facility described in this SPD EIS is a preconceptual design. It contains all the elements necessary for MOX fuel fabrication in an arrangement that can be used to assess the potential environmental impact of such a facility. As with any construction project, however, this design is subject to modification during the design and construction stage as may be required to optimize equipment placement and process flow. A goal of the facility design is to ensure that worker doses do not exceed an average of 500 mrem/yr and a maximum of 2 rem/yr. A team consisting of Duke Engineering & Services, COGEMA Inc., and Stone & Webster (DCS) has been hired by DOE to design, build, and operate the MOX facility should it be given the go-ahead in the SPD EIS ROD. The design team would review and consider available information on similar facilities to ensure that the MOX facility would incorporate the newest technologies and benefit from previous experience.

(2)

ref: John Hasler - LAX

6) that is one of the reasons that the weapons laboratories store plutonium as metal, not oxide.

other reasons for storing Pu as METAL!!

1. that is the form recovered from weapons
2. the density is 16 or 19.4, not about 5 to 6 for oxide, and is much more compact.
3. No oxide present means no  $\alpha, n$  neutrons
4. Can easily remove  $\text{Am}^{241}$  daughter (from  $\text{Pu}^{241}$  decay) by vacuum distillation.

7) any MOX facility, especially manned facilities, must have neutron absorbing walls to keep operating neutron fields as low as possible, and the actual process enclosures should be light-weight metal suspended on lightweight floors to minimize neutron reflection. Massive walls must be kept away from the operating area to minimize exposure.

8) Wolfgang Stoll (AKA "the Plutonium Pope" in Germany) gave a presentation at LWRN 4/86 where he described the flaws in the Siemens MOX facility that prevented even start-up of the facility. The neutron fields in the operating area was a major reason for cancelling operation, this was due to the designer's attempt to minimize cost (facility size) by placing the walls close to the operating glove boxes.

IDD01

③

9) It appears from a description of the proposed US-MOX facility that the designers do not understand the neutron field problem that accompanies work with any alpha emitting oxide material, especially Plutonium oxide ( $PuO_2$ ). The facility, as described, will simply duplicate the problems encountered by Siemens in Germany and not be operable.

1

10) Other neutron-related problems-

The proposed US facility has Materials Accountability Stations "MAP" adjoining each process area. The simplest and most practical way to quickly analyze Pu content is by "neutron counting" a fixed mass of feedstock. If the area has a high neutron background this is extremely difficult, if not impossible. Also, the detector becomes rapidly activated by the neutron field, and must be discarded (It cannot be rejuvenated). MAP areas depending on neutron emission counting must be located in areas that have a low background if accurate results are to be obtained. These areas can be on an upper floor in an area that is surrounded by lithium-bearing aggregate (Spodumene is a naturally occurring mineral with high Li content).

2

IDD01

#### IDD01-2

#### MOX Approach

This SPD EIS does not include a specification of systems or equipment at the individual component level; it only stipulates that certain types of systems or equipment would be included in the facility. The design team would ensure that the design of the MOX facility incorporated appropriate technologies arranged as appropriate for facility needs.

④

- 11) Other obvious flaws in the design—  
all toilets are located outside of the main operating areas beyond the security check points and will cause great displeasure to the operating staff. LLNL tried to operate in a similar facility and found that the technicians urinated into bottles that they either carried to the outside facilities at the end of the day, or emptied into the drains, leading to the radioactive holding tanks for the internal controlled facility. Neither approach is acceptable. This design is neither practical or necessary.

Toilet areas can be included in the RMA operating gallery on raised platforms, with special drains leading to holding tanks for effluent monitoring. This has been done in many SNM handling facilities. Trying to inconvenience the workers to solve a simple <sup>sanitary</sup> engineering problem is just plain stupid. It will not be successful.

3

IDD01

## IDD01-3

## MOX Approach

DOE acknowledges the commentor's concern over the functional design of the MOX facility and appreciates the sharing of professional experience in that regard. However, it is not generally accepted practice to locate sanitary facilities within radiologically controlled areas.

"Hanson Reports"

"The Plutonium Pope" - Wolfgang Stoll (WULF/96)  
Siemens Pu MOX facility - neutron emission  
Stoll is now: Institute for Industrial  
Environment, in Germany.

- Spontaneous fission neut. emission 2.5 MeV

$$\text{Pu}^{240} \text{ SF } t_{1/2} = 1.32 \times 10^4 \text{ years} = 2.503 \times 10^4 \text{ fissions/min/gram}$$

$$\text{total } t_{1/2} = 6540 \text{ years}$$

$$(\alpha = 5 \times 10^{14} \text{ fissions/kg})$$

$$\text{Pu}^{239} \text{ } 24,100 \text{ year } t_{1/2}$$

$$\alpha_{\text{total}} = 1.38 \times 10^{14} \text{ fissions/kg}$$

$$\left[ \begin{array}{l} 2.5 \times 10^4 \text{ fissions/kg} \\ [M = 1 \times 10^6 \text{ g/kg}] \\ [E = 2.5 \text{ MeV}] \end{array} \right]$$

$$\text{OXIDE} = \times 3 \text{ or more}$$

$$\text{atmos. O}^{17} = 0.038\%, \text{ } \sigma_{\alpha} = 0.24 \text{ barns, } R = 0.11 \text{ (BB = 0.1 mb)} \quad 6\% = 1/6$$

- Store and Ship as metal John Haschke, LANL

1. Because that is what is in weapons
2. The density is 16  $\rightarrow$  19.4 (nat 19.0) more compact
3. No oxide present no  $(\alpha, n)$
4. Can remove Am<sup>241</sup> by vacuum distillation  
(Growth from 14-yr Pu<sup>241</sup>)

- 6 Facility -

- ① needs to have  $\alpha, n$  neutron absorption  
neutroning reaction neutrons 2.5 MeV  $\rightarrow$  then
- ② don't place "MAP" areas near areas where quantities  
of Pu<sub>2</sub> reside - activation of GELI detectors, and  
high SF gamma background.

IDD01

**EAST BAY PEACE ACTION**  
**DALE NESBITT**  
**PAGE 1 OF 3**

Office of Fissile Materials Management  
 U.S. Department of Energy  
 1000 Independence Avenue, SW  
 Washington, D.C. 20585

Dear Department of Energy:

The following undersigned groups are requesting both an extension of the public comment period and additional Public Hearings on the "Draft Surplus Plutonium Disposition Environmental Impact Statement." The SPDEIS is the latest National Environmental Policy Act (NEPA) document that will help shape decisions on how to dispose of up to fifty metric tons of weapons usable plutonium that has been declared surplus to national security needs.

**Extend the Public Comment Period for Sixty Days**

The Department of Energy is allowing for a sixty day comment period for people to review and provide comments on a large, complex document that references twenty-eight other related NEPA documents, an economic report that not released until July 28, 1998, and numerous "Data Reports."

The Data Reports are unavailable to people who are not near a Department of Energy Reading Room, yet contain crucial information. For example, on page J-4 of the Draft SPDEIS, DOE wrote that, "source term data for radiological releases, stack heights, and release locations are provided in the data reports for the pit conversion, immobilization, and MOX facilities." In other words, the Draft SPDEIS does not contain any data on something as basic as expected quantities of radioactive air pollutants.

**Provide for Additional Public Hearings**

The Department of Energy is planning only five public hearings, four in the communities closest to DOE sites being considered for new plutonium processing plants, and one regional meeting in a downstream community (Portland). This public hearings schedule will likely dilute the diversity of public comments; inhibit the involvement of downwind and downstream communities that generally bear liabilities without benefits; and skew the public opinion curve in favor of DOE proposals.

DOE should add the following hearings to its list:

1. Regional Hearings in Savannah, Georgia and Columbia, South Carolina. The Savannah River Site is the preferred candidate site for all three new plutonium processing facilities. Real impacts on the Savannah River from SRS operations and accidents are well documented, with the most notable being the December, 1991 tritium leak that quickly reached Savannah, Georgia. DOE cannot justify not holding a regional hearings in the Savannah River region, which will bear the greatest liability from its proposals, while holding one in Portland to discuss why Hanford is no longer preferred for

FD198

**FD198-1**

**General SPD EIS and NEPA Process**

DOE believes that the comment period, longer than required by CEQ's NEPA regulations, allowed sufficient time for public review of the SPD Draft EIS. Moreover, comments submitted after the close of the comment period were also considered.

DOE's descriptions of the affected environment and the potential environmental impacts in this SPD EIS are in accordance with 40 CFR 1502.15 and 40 CFR 1502.16. These descriptions are no longer than necessary for an understanding of the effects of the alternatives, and the analyses and data are commensurate with the significance of the impact, the less-important information being consolidated, summarized, or referenced. Resources such as the data reports are available in the public reading rooms at the following DOE locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

**FD198-2**

**General SPD EIS and NEPA Process**

It was not possible to hold hearings in all areas of the country; therefore, the hearings were restricted to locations where the greatest impacts of the proposed surplus plutonium disposition facilities could be expected. DOE did, however, provide various other means for public comment on this SPD EIS: mail, a toll-free telephone and fax line, and the MD Web site. During preparation of the *Storage and Disposition PEIS*, regional hearings were held in locations such as Boston, Chicago, San Francisco, and Denver. Denver was included because the PEIS dealt with the removal of materials from RFETS. DOE made, and is honoring, a commitment to get all plutonium out of RFETS. Additional hearings in Denver were not held because the proposed surplus plutonium disposition facilities would not be sited in the area. Shipment of MOX fuel to Canada for testing is under consideration as part of a separate EA, and is not within the scope of this EIS. The *Environmental Assessment for the Parallax Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999) and FONSI (August 1999) can be viewed on the MD Web site at <http://www.doe-md.com>.

These liabilities

2 Regional hearings in communities near nuclear reactor sites that are being proposed for irradiation of Mixed Oxide (MOX) fuel. Consortiums of utilities and nuclear fuel fabricators are scheduled to submit Proposals for MOX Fuel Fabrication and Irradiation Services August 1998. Based on these proposals, DOE can identify potentially affected reactor communities.

DOE has stated that "environmental impact analysis relating to specific reactors will be included in the SPD Final EIS," although these analyses are scheduled to be made by Consortiums in their Proposals. During the 1997 Scoping for the SPDEIS, DOE was repeatedly asked to involve nuclear reactor communities in the NEPA process, yet ignored these comments while moving forward on a process to select reactor sites that excludes community input. DOE cannot justify soliciting public comment for the site selection process for plutonium processing facilities, while excluding public involvement in selecting plutonium irradiation facilities.

3 A regional hearing in Denver, Colorado. Denver is in proximity to Rocky Flats where approximately 25% of the surplus plutonium is in storage, so the area has a stake in the decisions being made. Furthermore, DOE has never held hearings to discuss plutonium immobilization of Rocky Flats plutonium as a reasonable alternative, and is proposing to weaken the requirements for shipping plutonium from Rocky Flats to Savannah River Site.

4 A regional hearing in Dallas, Texas. Dallas is likely to be in the transportation corridor for shipments of special nuclear materials and radioactive waste from new operations. The Department of Energy cannot legitimately claim that state-wide support exists in Texas for Pantex becoming a new DOE plutonium processing site without seeking input from outside the Amarillo area.

5 A hearing in Washington D.C., where decisions are made, policy is formulated, and a substantial community of non-governmental organizations exists to monitor the Department of Energy, and where a larger community of organizations exists to monitor how taxpayer dollars are spent.

6 Port Huron, Michigan (or other location), the location of the border crossing for plutonium fuel shipments to Chalk River, Ontario to test in CANDU reactors. DOE is still considering the option of burning MOX fuel in CANDU reactors, yet has effectively excluded Canadian citizens from the process. The hearing could be a cooperative public event held with the Atomic Energy of Canada, Ltd.

The abundant uncertainties and recent changes in direction in the Department of Energy's hazardous plutonium disposition program indicates a continued need to subject Federal proposals to the highest and most rigorous levels of public debate possible. DOE has already failed to implement the easiest part of its plutonium storage and disposition program. At Pantex it has abandoned its new "safer" container and a proposed facility upgrade for plutonium pit storage.

For Rocky Flats plutonium, it is already amending the "Record of Decision" for the "Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement" to "address the environmental impact of utilizing the K-Reactor facility for plutonium

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DOE actively sought public comments on the SPD Draft EIS and distributed approximately 1,700 copies of the document to all interested parties. All comments, regardless of how they were submitted, were given equal consideration.

### FD198-3

### General SPD EIS and NEPA Process

The SPD Final EIS was not issued until the proposed reactors had been identified and the public had an opportunity to comment on the reactor-specific information. As part of the procurement process, bidders were asked to provide environmental information to support their proposals. This information was analyzed in an Environmental Critique prepared for the DOE source selection board prior to award of the MOX fuel fabrication and irradiation services contract. DOE then prepared an Environmental Synopsis on the basis of the Environmental Critique, which was released to the public as Appendix P of the *Supplement to the SPD Draft EIS* in April 1999. This *Supplement* included a description of the affected environment around the three proposed reactor sites, and analyses of the potential environmental impacts of operating these reactors using MOX fuel (Sections 3.7 and 4.28 of this SPD EIS, respectively). During the 45-day period for public comment on the *Supplement*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. Responses to those comments are provided in Volume III, Chapter 4.

### FD198-4

### General SPD EIS and NEPA Process

Since the inception of the fissile materials disposition program, DOE has supported a vigorous public participation policy. It has conducted public hearings in excess of the minimum required by NEPA regulations on the weapons-usable fissile materials disposition program at various locations around the country, not just near the potentially involved DOE sites, to engender a high level of public dialogue on the program. The office has also provided the public with substantial information in the form of fact sheets, reports, exhibits, visual aids, and videos related to fissile materials disposition issues. It hosts frequent workshops, and senior staff members make presentations to local and national civic and social organizations on request. Additionally, various means of

**EAST BAY PEACE ACTION**  
**DALE NESBITT**  
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storage, the possibility that plutonium stabilization would be done at SRS instead of at RFETS, the shipment of plutonium to SRS before the APSF storage vault is operational, the shipment of some materials from RFETS that are less than 50% plutonium, and the need to utilize direct metal casting in FB-Line to de-classify some of the RFETS." (Defense Nuclear Facilities Safety Board Weekly Report for Savannah River Site, June 26, 1998).

The National Environmental Policy Act requires Federal Agencies to insure that high quality "environmental information is available to public officials and citizens before decisions are made and before actions are taken", and that substantial and meaningful public involvement in the planning and decision process. By restricting public hearings to a few communities, DOE would, at best, be violating the spirit of NEPA.

Signed, *Dale Nesbitt, Board member, East Bay Peace Action (Sign approved by majority of Board via a telephone poll)*

*P.S. We urge that a public hearing also be held in the S.F. Bay Area - preferably Oakland. We feel that everyone has a stake in in how Pl is "disposed" off - not just those who live close to the proposed processing sites.*

communication—mail, a toll-free telephone and fax line, and a Web site (<http://www.doe-md.com>)—have been provided to facilitate the public dialogue. It is DOE policy to encourage public input into these matters of national and international importance.

**FD198-5**

**Storage and Disposition PEIS and ROD**

DOE acknowledges the commentor's concern regarding interim and long-term storage of plutonium pits at Pantex. DOE is committed to the safe, secure storage of these pits and is considering additional upgrades to Pantex facilities to address plutonium storage requirements. In addition, DOE has addressed some of the commentor's concerns in an environmental review concerning the repackaging of Pantex pits into a more robust container. This evaluation is documented in the *Supplement Analysis for: Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components-AL-R8 Sealed Insert Container* (August 1998). This document is on the MD Web site at <http://www.doe-md.com>.

**FD198-6**

**Storage and Disposition PEIS and ROD**

DOE conducted a supplement analysis for the early movement to and storage of the RFETS surplus plutonium in Building 105-K after modifications to enable safe, secure plutonium storage. Based on this analysis, DOE issued the amended ROD referenced in the comment in the Federal Register (63 FR 43392) on August 13, 1998, in fulfillment of the letter and spirit of NEPA (40 CFR 1506.6(b)). The decision is contingent on a decision under this SPD EIS to locate an immobilization facility at SRS. A copy of the amended ROD and the supplement analysis is available in the DOE reading rooms and on the MD Web site at <http://www.doe-md.com>.



Yes, I would like to express my opposition to using weapons grade plutonium from the military in commercial reactor fuel, for commercial reactor fuel. And I would also like a copy of the environmental impact statement concerning this project. My name is: James Ferrigno. My address is: 118 Miramar Avenue. That's in San Francisco, CA. Zip Code 94112. If you would like to, you can reach me daytime phone 415-334-7963. Thank you.

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PD004

**PD004-1**

**DOE Policy**

DOE acknowledges the commentor's opposition to the commercial use of weapons-usable plutonium. The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing irradiation.



IT IS CORRUPT - BADLY-CONSTRUCTED  
AND TOTALLY DEVOID OF MERIT

Department of Energy  
Washington, DC 20585

PAR

1998-008753 7/28 11:41

To Interested Parties:

The Department of Energy's *Surplus Plutonium Disposition Draft Environmental Impact Statement* (EIS) is now available for public review. The formal public comment period for the draft will begin on July 17, 1998 and will close on September 16, 1998.

If you have not already received a copy of the draft EIS or a summary, you can obtain copies by written request to:

U.S. Department of Energy  
Office of Fissile Materials Disposition  
P.O. Box 23786  
Washington, D.C. 20026-3786

Or by calling 1-800-820-5134.

As part of the formal comment period and pursuant to the National Environmental Policy Act, the Office of Fissile Materials Disposition will hold public meetings at five different locations to solicit written and oral comments on the draft SPD EIS. These meetings are an important component of the Department's continuing efforts to provide the public with meaningful and easily-accessible opportunities to participate in its decision making process.

The public meetings will be held between the dates of August 4, 1998 and September 16, 1998. Two sessions (afternoon and evening) will be held at each location and will include workshops to provide an opportunity for discussion and comment. Preregistration for the meetings is requested. For your convenience, preregistration may be accomplished by fax, electronic bulletin board, or a toll-free telephone number. Please refer to the preregistration form on the back of this letter for specific meeting dates, times, locations, and registration instructions.

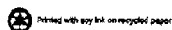
After the comment period on the draft EIS has closed, the Department will evaluate all comments received. The final EIS will incorporate changes to the text and will include responses to all comments. The final EIS will be completed in late 1998 and will be

We welcome your interest in the fissile materials disposition program and look forward to the receipt of your comments and participation in the public meetings.

Sincerely,

Howard R. Cantor  
Acting Director  
Office of Fissile Materials Disposition

Enclosure



Printed with soy ink on recycled paper

FD002

FD002-1

General SPD EIS and NEPA Process

DOE acknowledges the commentor's views on this SPD EIS.